

Patent Claims

1. A method for determination of the rotation speed of a direct-current motor (1), having the following 5 steps:

- detection of the motor voltage or of the motor current, or of a signal which is derived from the motor voltage or motor current of the direct-current motor (1),
- 10 - sampling of the signal and production of a sequence of sample values,
- formation of a first mean value of a first number of sample values,
- formation of a second mean value of a second 15 number of sample values,
- comparison of the first mean value with the second mean value, and production of a mathematical sign of the result,
- calculation of the rotation speed as a function of 20 the number of sample values between mathematical-sign changes, in the process carrying out a multiplication of the number of sample values between mathematical-sign changes of the recurring comparison results by the time period between the 25 individual samples, which is predetermined by the sampling rate at which the signal is sampled.

2. The method as claimed in claim 1, characterized in that the first number of sample values is greater than 30 the second number of sample values.

3. The method as claimed in claim 1 or 2, characterized in that the first and the second mean values are updated continuously.

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4. The method as claimed in one of claims 1 to 3, characterized in that the rotation speed is calculated as a function of the time which passes between

electrical contact changes between individual commutator laminates and the sliding contact.

5. The method as claimed in one of claims 1 to 4,
5 characterized in that the rotation speed is measured continuously.

6. An arrangement for carrying out the method as claimed in one of claims 1 to 5, comprising

- 10 - a signal input (3) for supplying the signal which is derived from the motor voltage or the motor current of the direct-current motor (1),
- an analog/digital converter (5) having an input which is coupled to the signal input (3) and having an output for production of the sequence of sample values,
- 15 - a first averager (61) for the sequence of sample values, which is coupled to the output of the analog/digital converter (5),
- 20 - a second averager (62) for the sequence of sample values, which is coupled to the output of the analog/digital converter (5),
- a comparator (63), which is connected to the first and to the second averager (61, 62), and
- 25 - a computation unit (64) for outputting a rotation-speed-dependent signal, which computation unit (64) is coupled to the comparator (63).

7. The arrangement as claimed in claim 6,
30 characterized in that a digital signal processor (6) is provided which comprises the first averager (61), the second averager (62), the comparator (63) and the computation unit (64).

35 8. The arrangement as claimed in claim 6 or 7,
characterized in that a current measurement resistor (3) is provided, and forms the signal input of the arrangement.

9. The arrangement as claimed in claim 8,
characterized in that the current measurement resistor
(3) is connected in series with the direct-current
5 motor (1).

10. The arrangement as claimed in one of claims 6 to
9, characterized in that a DC voltage amplifier (4) is
provided which couples the signal input (3) to the
10 input of the analog/digital converter (5).

11. The arrangement as claimed in one of claims 6 to
10, characterized in that the direct current motor (1)
is a direct-current commutator motor.

15 12. The use of an arrangement as claimed in one of
claims 6 to 11,
in a direct-current motor (1) for driving a fan.

20 13. The use of an arrangement as claimed in one of
claims 6 to 11,
in a direct-current motor (1) for driving a pump.